REMARKS

Claims 1-6 and 9-12 were rejected under 35 U.S.C. 102 over Komiyama. This rejection is respectfully traversed.

The Komiyama reference teaches a gas-sensitive composite material constituted by a microporous dielectric and a thin film consisting of ultrafine metal particles dispersed in, and supported by, at the least the porous surface layers of the dielectric. The present invention, in contrast, relates to a three-dimensional periodic structure in which two substances having different dielectric constants are periodically distributed in a three-dimensional space. Thus, the claimed invention relates to a structure in which two substances are distributed in a regular order whereas the reference distributes pores randomly in a dielectric. In addition, there is no suggestion that the Komiyama structure would be periodic because the purpose of that invention is gas sensing and such a regular array is not required. Indeed, Figure 1 in the reference also shows the air pores are not periodically distributed.

The Office Action takes issue with the foregoing on the grounds that "periodic" could mean sporadic or occurring at random intervals, rather than appearing at regular intervals. That proposition is not valid because the PTO must give claim terms their broadest reasonable meaning consistent with the specification under consideration. MPEP 2111. In this application, a sporadic or random meaning is inconsistent with the specification. See, e.g., page 7, lines 12-17. The skilled person would also recognize that in this technology, periodic means regular intervals, as evidenced by the use of that terminology and meaning in Zakhidov.

While unnecessary in view of the foregoing distinction, it is respectfully pointed out that "electroless plating film" is a product recitation and not a product-by-process limitation.

Claims 1-5, 7, 9-11 and 13 were rejected under 305 U.S.C. 102 over Zakhidov. This rejection is also respectfully traversed.

The Zakhidov patent relates to a templating process in which one three-dimensional structure is used as a negative to form another three dimensional structure. The templating results in a continuous structure. This is apparent from the patent as well as the article previously submitted.

The method described in the patent involves assembling monodispersed spheres of material A and joining the spheres together so that their necks connect neighboring particles leaving a void space in an opal-like structure. Next, the opal structure is used as a template for obtaining a three-dimensional periodic assembly of a second material B which is infiltrated into the opal structure. Finally, the initial opal material A is removed to obtain a hollow structure of material B that is an inverse replica of the original structure. See, e.g., column 6, lines 33-65.

The infiltrating process can either be volumetric fill in which the material infiltrated substantially fills the void space of the opal or surface filling in which the material is infiltrated to apply a coating on the interior surfaces of the opal (column 6, lines 52-57). In either case, a number of methods can be used to obtain infiltration such as melt or solution infiltration, chemical vapor deposition (CVD), gas phase condensation, electrochemical deposition and the like. As is apparent, the complete filling of the void

volume in the volume templating process does not result in a discontinuous material. The surface filling procedures also do not result in a discontinuous material. For example, the electrodeposition process involves the electrodeposited material growing from the electrode coated side of the opal to the opposite side (column 12, lines 5-9). Other deposition processes such as melt or solution infiltration CVD and the like also provide a continuous material.

The current Office Action has directed specific attention to patch templating. In this subcategory, the surfaces of the void structure are provided with a surface coating of infiltrated material and uncoated regions exist (column 12, lines 62-65). In the previous response, applicants were trying to point out that this indicated a continuous structure was achieved and did not imply a discontinuous material, but inaccurately stated uncoated regions did not exist. While such regions do exist, the point that applicants were trying to make is still valid. The presence of uncoated regions does not mean the coating is discontinuous. Consider, for example, a sheet of coated paper having a uncoated section positioned in the middle but not reaching the margins. The coating would still be continuous even though there may be uncoated regions. Because the coating of material B is forming a structure which is the reverse (negative) of the material A opal structure, and the opal structure of material A is continuous, the coating must also be continuous even if there may be some areas where the coating is absent. If this were not true, the material B structure would break apart when material A is removed from the composite.

The Office Action calls attention to CVD deposition but, as noted above, the reference states this involves film growth from an initiation point (col. 12, lines 8-10) and that results in a continuous film.

In the category of particle loading where particles infiltrate and are aggregated together to form a mechanical robust structure which will not deaggregate and be lost when the host material A is extracted (column 13, lines 10-13), the aggregation of the particles forms a continuous structure. The infiltrated particles must be connected together, i.e., aggregated, in order to achieve the mechanical robust structure, and by virtue of the contact between particles, that material B structure is not discontinuous. If the independent conductive particles or clusters were not connected, thereby forming discontinuous conductive film, the film would not be mechanically robust.

Further, nothing in Zakhidov suggests that conditions of infiltration be controlled to realize a discontinuous layer. Since the infiltrate will become the product after the removal of material A, continuity is required for the integrity of the final product, and discontinuity is contraindicated. In none of the templating processes described is a discontinuous conductive film of independent conductive particles or clusters formed. To the extent independent particles or clusters may be a part of this film, they are connected to form the mechanically robust continuous film necessary to maintain conductivity.

Therefore, the Zakhidov structure is clearly different from that claimed here and an anticipation rejection is untenable for all of the reasons set out above.

Further, the reference provides no reason for forming a conductive film having particles or clusters coarsely distributed at an interface between substances having different dielectric constants periodically distributed in a three-dimensional space and, therefore, a rejection based on obviousness is not tenable.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

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Respectfully submitted,

By /Edward A. Meilman/
Edward A. Meilman
Registration No.: 24,735
DICKSTEIN SHAPIRO LLP
1177 Avenue of the Americas
New York, New York 10036-2714
(212) 277-6500
Attorney for Applicant